UCRL-JC-127165 Abs

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Infrared photon induced noise in detectors for photons and particles

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Noise due to thermal infrared photons can limit the energy resolution of single photon and particle detectors. The influence of infrared photons on the observed energy resolution is not a function of the detection mechanism. In contrast, this influence is only determined by a) the number of infrared photons hitting the detector within the measurement integration time, b) the energy distribution of the photons and c) the electronic filtering. Spectra obtained with Monte Carlo analysis for some infrared-blocking filters will be presented. The optimization of electronics in the presence of infrared photon noise will be discussed.

This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under contract No. W-7405-Eng-48